

What is claimed is:

5 1. A protein having a transglutaminase activity, which comprises a sequence ranging from serine residue at the second position to proline residue at the 331st position in an amino acid sequence represented by SEQ ID No. 1 wherein the N-terminal amino acid of the protein corresponds to serine residue at the second position of SEQ ID No. 1.

10 2. The protein of claim 1 which consists of an amino acid sequence of from serine residue at the second position to proline residue at the 331st position in an amino acid sequence of SEQ ID No. 1.

15 3. A DNA which encodes for the protein of claim 1.

4. A DNA which encodes for the protein of claim 2.

5. The DNA of claim 3 wherein a base sequence encoding for Arg at the forth position from the N-terminal amino acid is CGT or CGC, and a base sequence encoding for Val at the fifth position from the N-terminal amino acid is GTT or GTA.

6. The DNA of claim 5 wherein a base sequence encoding for from the N-terminal amino acid to the fifth amino acid, Ser-Asp-Asp-Arg-Val, has the following sequence.

20 Ser : TCT or TCC

Asp : GAC or GAT

Asp : GAC or GAT

Arg : CGT or CGC

Val : GTT or GTA

25 7. The DNA of claim 6 wherein a base sequence encoding for an amino acid sequence of from the N-terminal amino acid to the fifth amino

acid, Ser-Asp-Asp-Arg-Val, has the sequence TCT-GAC-GAT-CGT-GTT.

8. The DNA of claim 6 wherein a base sequence encoding for an amino acid sequence of from the sixth amino acid to the ninth amino acid from the N-terminal amino acid, Thr-Pro-Pro-Ala, has the following sequence.

Thr : ACT or ACC

Pro : CCA or CCG

Pro : CCA or CCG

Ala : GCT or GCA

9. The DNA of claim 7 wherein a base sequence encoding for an amino acid sequence of from the sixth amino acid to the ninth amino acid from the N-terminal amino acid, Thr-Pro-Pro-Ala, has the following sequence.

Thr : ACT or ACC

Pro : CCA or CCG

Pro : CCA or CCG

Ala : GCT or GCA

10. A DNA comprising a sequence ranging from thymine base at the fourth position to guanine base at the 993rd position in the base sequence of SEQ ID No. 2.

11. A DNA consisting of a sequence ranging from thymine base at the fourth position to guanine base at the 993rd position in the base sequence of SEQ ID No. 2.

12. A recombinant DNA having a DNA of claim 3.

13. A recombinant DNA having a DNA of claim 5.

14. A recombinant DNA having a DNA of claim 6.

15. The recombinant DNA of claim 12 which has a promoter selected from the group consisting of trp, tac, lac, trc, λ PL and T7.

16. The recombinant DNA of claim 13 which has a promoter selected from the group consisting of trp, tac, lac, trc, λ PL and T7.

5 17. The recombinant DNA of claim 14 which has a promoter selected from the group consisting of trp, tac, lac, trc, λ PL and T7.

18. A transformant obtained by the transformation with the recombinant DNA of claim 12.

10 19. The transformant of claim 18 wherein a transformation is conducted by use of a multi-copy vector.

20. The transformant of claim 18, which belongs to Escherichia coli i.

21. A transformant obtained by the transformation with the recombinant DNA of claim 14 wherein a transformation is conducted by use of a multi-copy vector, the transformant belonging to Escherichia coli.

15 22. A process for producing a protein having a transglutaminase activity, which comprises the steps of culturing the transformant of claim 18 in a medium to produce the protein having the transglutaminase activity and recovering the protein.

20 23. The process of claim 22 wherein the transformant is that of claim 19.

24. The process of claim 22 wherein the transformant is that of claim 20.

25 25. The process of claim 22 wherein the transformant is that of claim 21.